380440:tjc:31122-8

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. patent application of:

Oleg Wasynczuk, et al.

Serial No. 09/884,528

Filed June 19, 2001

DISTRIBUTED SIMULATION

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Before the Examiner

Ayal I. Sharon

Group Art Unit 2123

DECLARATION OF DR. OLEG WASYNCZUK

1. My name is Dr. Oleg Wasynczuk. I am a research Fellow at P.C. Krause and Associates, Inc. (hereinafter "PCKA") and a co-inventor of the above-referenced patent application. I also hold the position of Professor with the School of Electrical and Computer Engineering at Purdue University, and I am a Senior member of the Institute of Electrical and Electronics Engineers (IEEE).

2. PCKA has its headquarters in West Lafayette, Indiana and specializes in the analysis, design, and simulation of power systems and power system components, with particular emphasis on terrestrial power systems and power-electronic-based systems being used in or designed for ships, ground vehicles, aircraft, and spacecraft. In 2003, PCKA expanded its operations and opened a new office in Beavercreek, OH. Located just minutes from Wright-Patterson Air Force Base, this office supports numerous Air Force programs and research initiatives.

3. PCKA has received funding from numerous U.S. government agencies including the Air Force Research Lab (AFRL), United States Army, United States Marine Corps Systems Command, Missile Defense Agency (MDA), National Aeronautics and Space Administration (NASA), Naval Sea Systems Command (NAVSEA), Naval Surface Warfare Center (NSWC),

Office of Naval Research (ONR), Tank-automotive and Armaments Command (TACOM), United States Naval Academy and United States Naval Postgraduate School, as well as several private companies.

4. PCKA is the sole developer and provider of the Distributed Heterogenous Simulation (DHS) software under the present patent application.

5. As a Research Fellow at PCKA and co-inventor of the DHS product, I have knowledge of the technical composition and operation of the PCKA DHS product.

6. The DHS software sold by PCKA includes the following features:

a first executing process that: a) implements a first continuous-time model to simulate a first subsystem, the first model being programmed in a first language and having a first state variable; and b)sends a first series of state-related numerical values, each numerical value reflecting information relating to the value of the first state variable at a different point t_m in simulation time in the first model; and

a second executing process that: a) receives said first series of state-related numerical values from said first executing process without said first series of state-related numerical values passing through a central communication process; b) implements a second continuous-time model to simulate a second subsystem, the second model being programmed in a second language and taking as an input values from said first series of state-related numerical values; and c) outputs data representative of a state of the second continuous-time model.

7. Prior to development of the DHS software, the Defense Modeling and Simulation Office (DMSO) released a High Level Architecture (HLA) specification that defined a high-level architecture in which Department of Defense (DoD) models would be interoperable. The

DMSO HLA has been cited by the Examiner as prior art in the above-referenced patent application.

8. Due to my past experience working in simulation of complex systems for several U.S. military organizations, I am familiar with the DMSO HLA specification.

9. The HLA specification cited by the Examiner defined only a broad set of rules and goals that the DMSO imposes for reuse and interoperability of DoD models. It does not provide an implementation to accomplish those goals. The DoD left the development of simulation methodologies that will meet these goals to contractors working with the DoD.

10. The HLA specifies that a subsystem may interface with and be controlled by a higher-level process, but all communications between the subsystem and the higher level process pass through a central process.

11. Attached as Exhibit A are two slides from a DoD presentation at the Object Management Group Salt Lake Meeting (February 1998) illustrating that the DMSO HLA requires communication between all of the subsystems to be routed through an Interoperation Facility (Runtime Infrastructure) – in other words, a central communication process.

12. The PCKA DHS software solves the distributed simulation problem in a fundamentally different manner. The DHS software allows the various subsystems or processes to pass data peer-to-peer, without an intervening central communication process. The DHS software therefore achieves similar goals as those stated in the HLA, without being HLA compliant.

13. The DMSO HLA never achieved its goals. Instead, the various military organizations under the U.S. Government DoD have purchased and are using the PCKA DHS software product.

14. A separately-submitted Declaration of Dr. Paul C. Krause provides details of such purchases by the U.S. Government.

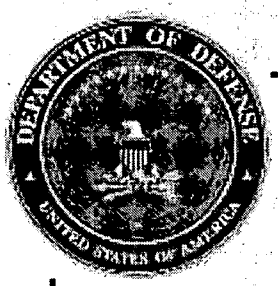
15. Of particular significance, the U.S. Air Force has awarded PCKA a $49 million IDIQ SBIR Phase III contract to support the commercialization of the DHS product. Furthermore, the Air Force has invested several million dollars in fundamental research that makes use of the DHS product to perform higher-level research objectives.

16. This is evidence that the PCKA DHS product is different than and superior to the prior art DMSO HLA previously propounded by the DoD.

17. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dr. Oleg Wasynczuk

1/17/2006
Date



Request for Comments: Distributed Simulation Systems Interoperation Facility

Frederick Kuhl, P.E., Ph.D.

OMG Salt Lake Meeting
February 1998

Specification Defines Two Interfaces: RTIambassador and FederateAmbassador